Electronic Version
Stylesheet Version v1.1.1

Claims

[c1] 1.A method of fabricating a color filter substrate, the method comprising:
forming a black matrix on a substrate;
forming a color photoresist layer on the substrate covering the black matrix;
setting a photomask above the substrate and performing an exposure process over the photoresist layer, wherein the photomask has a transparent region, a partial transparent region and a non-transparent region, and the partial transparent region is located between the transparent region and the non-transparent region and aligned to the edge of the black matrix; and
performing a development process for patterning the color photoresist layer.

[c2] 2. The method of fabricating a color filter substrateof claim 1, wherein the transparent area of the partial transparent region is gradually reduced from the transparent region to the non-transparent region.

[c3] 3. The method of fabricating a color filter substrateof claim 1, wherein the material of the black matrix comprises black resin.

[c4] 4. A method of fabricating a color filter substrate, the method comprising:

forming a black matrix on a substrate, the black matrix having a first region, a second region and a third region;

forming a first color photoresist layer on the substrate for covering the black matrix;

setting a first photomask above the substrate for performing a first exposure process for the first photoresist layer, wherein the first photomask has a first transparent region, a first partial transparent region and a first non-transparent region, and the first partial transparent region is located between the first transparent region and the first non-transparent region and aligned to the edge of the black matrix;

performing a first development process for patterning the first color photoresist layer to form a patterned first color photoresist layer in the first region;

forming a second color photoresist layer on the substrate and covering the patterned first photoresist layer and the black matrix;

setting a second photomask above the substrate for performing a second exposure process over the second photoresist layer, wherein the second photomask has a second transparent region, a second partial transparent region and a second non-transparent region, and the

second partial transparent region is located between the second transparent region and the second non-transparent region and aligned to the edge of the black matrix;

performing a second development process for patterning the second color photoresist layer to form a patterned second color photoresist layer in the second region;

forming a third color photoresist layer on the substrate and covering the patterned first photoresist layer, the patterned second photoresist layer and the black matrix;

setting a third photomask above the substrate for performing a third exposure process for the third photoresist layer, wherein the third photomask has a third transparent region, a third partial transparent region and a third non-transparent region, and the third partial transparent region is located between the third transparent region and the third non-transparent region and aligned to the edge of the black matrix; and

performing a third development process for patterning the third color photoresist layer to form a patterned third color photoresist layer in the third region.

[c5] 5. The method of fabricating a color filter substrateof claim 4, wherein the first transparent area of the first partial transparent region is gradually reduced from the first transparent region to the first non-transparent re-

gion.

[c6] 6. The method of fabricating a color filter substrateof claim 4, wherein the second transparent area of the second partial transparent region is gradually reduced from the second transparent region to the second non-transparent region.

[c7] 7. The method of fabricating a color filter substrateof claim 4, wherein the third transparent area of the third partial transparent region is gradually reduced from the third transparent region to the third non-transparent region.

[c8] 8. The method of fabricating a color filter substrateof claim 4, wherein the material of the black matrix comprises black resin.

[c9] 9. A structure of a color filter substrate, comprising:
a substrate;
a black matrix formed on the substrate; and
a color photoresist layer covering the substrate, wherein a portion of the color photoresist layer covers the edge of the black matrix and wherein the surface of the color photoresist layer is planar.

[c10] 10. The structure of a color filter substrateof claim 9, wherein the material of the black matrix comprises black

resin.